

REMARKS

Claims 1, 3-7, 11, and 13-14 are presently pending in the application.

The Examiner has rejected claims 1 and 3-5 under 35 U.S.C. §112, 2nd paragraph, as being indefinite with respect the “solids” in section (f) of claim 1, questioning whether these are the same solids as in section (e) of claim 1. The answer is yes, and Applicant has therefore adopted the Examiner’s suggestion to amend section (f) to read “to remove the solids.” No new matter has been added by this Amendment. Moreover, entry of the Amendment after final rejection is appropriate, because the Amendment does not raise any new issues, but removes a rejection and places the application in better condition for appeal, if necessary. Accordingly, entry of the Amendment and reconsideration and withdrawal of the rejection are respectfully requested.

The Examiner has rejected claims 1, 3-7, 11, 13 and 14 under 35 U.S.C. §103(a) as being unpatentable over Japanese patent application publication 59-132911 of Tetsuzou et al (“JP’211”) in view of Japanese patent application publication no. 63-126509 of Hiromitsu (“JP’509”). The Examiner contends that JP’911 discloses substantially all of the features of claim1 but fails to disclose that in step (f) the removing of the solids of the accumulated first separated fraction can be done by using a rotary brush to scrape the inner periphery of the filtering rings. However, the Examiner contends that JP’509 discloses a fluid treating apparatus and method including the step of using a rotary brush to scrape filtering rings to remove accumulated solids. The Examiner concludes that it would have been obvious to one skilled in the art to have replaced the backwashing device of JP’911 with the rotary brush of JP’509 because scraping causes less mess than backwashing, and it is easier to dispose of dry solids than wet solids.

This rejection is respectfully but strenuously traversed for the reasons set forth in detail below. For the Examiner’s reference, Applicant is enclosing full copies of the Japanese patent application publications 59-132911 and 63-126509, which have clearer copies of the drawings of these applications than the Abstracts provided by the Examiner with the Office Action.

JP’911 discloses a filtering device having a filtering element 5a formed into a cylinder by overlapping discs 5 arranged in layers (see Figs 6, 8 and 10). The discs appear to have a surface

roughness of 5 μ m to 10 μ m, and the discs constituting the element 5a are merely piled up without being secured to each other (see last line of page 5 of English translation provided by Examiner).

In use of the filter device of JP'911, the fluid containing solid foreign substances flows either from the outside in or from the inside out of the cylindrical filter element 5a, the fluid passes between the laminated flat discs 5 of the element 5a, and then comes out the opposite side (inner or outer) of the element 5a. During this flow, the solid foreign substances are captured at the entry between the flat discs 5 and are removed from the fluid.

After some accumulation of the solid foreign substances on the element 5a, these accumulated solids are precipitated on the bottom of the entry chamber of the fluid by temporarily putting the fluid into a reverse flow (generally called "reverse washing" or "backwashing"). At the time of the reverse washing the element guides 9 are moved vertically from their lower position 9a to their extended position 9b (see Figs 8 and 10), so that the distance between each pair of discs 5 is increased to allow the reverse flow to more easily remove the accumulated solids from the entry positions between the flat discs 5.

With respect to JP'509, it is apparent that the Examiner is merely relying upon this reference to show a filter device having scraper blades 11 to scrape the outer screen 5 of the filter device.

In contrast, according to the present claimed invention, each of the filtering rings 3 constituting the ring lamination 4 has an inner periphery being convexly curved in a radially inward direction and an outer periphery having a wedge shape converging in a radially outward direction (see section (a) of claim 1). Filtering rings having such configurations are neither taught nor suggested by either JP'911 or JP'509.

As described in detail in paragraphs [0068]-[0070], [0077]-[0078] and [0091] of the present specification, filtering rings having these specific inner and outer peripheries, namely a curved shape and a wedge shape, have the following important advantages:

- (1) to adhere the fine particles (particularly inorganic fine particles) to the inner periphery, and thereby to intensify the so-called bridging phenomenon as shown in Fig. 5;


- (2) to make the gap distance (g) between adjacent rings larger, so as to increase the backwashing effect shown in Fig 6.

Therefore, with the construction of the presently claimed invention, which is not taught or suggested by either JP'911 or JP'509, the presently claimed device does not require element guides 9 to extend the distance between adjacent discs 5 as during the reverse washing in the filter device of JP'911. Consequently, the device of the presently claimed invention achieves better filtering by the intensified bridging phenomenon, coupled with excellent backwashing effect, without the complication and expense of the additional element guides of JP '911.

Therefore, even if JP '911 and JP '509 were properly combinable, which Applicant does not concede, the combination would still fail to teach or suggest the presently claimed invention, particularly the configuration of the individual filtering rings of the ring lamination, as specified in section (a) of claim 1. Accordingly, the rejection of the claims over JP'911 in view of JP '509 is improper and reconsideration and withdrawal of the rejection are respectfully requested.

In view of the above Amendment, all of the claims are in compliance with 35 U.S.C. §112, and in view of the above Remarks, all of the claims patentably distinguish over the prior art relied upon by the Examiner. Reconsideration and an early Notice of Allowance are respectfully solicited.

Respectfully submitted,
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Enclosures – Petition for Extension of Time (one month)
JP 59-132911 (full Japanese text and drawings)
JP 63-126509 (full Japanese text and drawings)